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Germain et al.

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(54) **TISSUE EXTRACTION DEVICES AND METHODS**

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This patent is subject to a terminal disclaimer.

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(56) **References Cited**

U.S. PATENT DOCUMENTS

4,650,462 A 3/1987 DeSatnick et al.
4,735,603 A 4/1988 Goodson et al.
(Continued)

FOREIGN PATENT DOCUMENTS

EP 2100567 A1 9/2009
GB 2327351 A 1/1999
(Continued)

OTHER PUBLICATIONS

AAGL Practice Report: Practice Guidelines for the Management of Hysteroscopic Distending Media: (Replaces Hysteroscopic Fluid Monitoring Guidelines. J Am Assoc Gynecol Laparosc. 2000;7: 167-168) J Minim Invasive Gynecol. Mar.-Apr. 2013;20:137-48. doi: 10.1016/j.jmig.2012.12.002.
(Continued)

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(57) **ABSTRACT**

The tissue cutting device comprises an elongated assembly including both an outer sleeve and an inner sleeve. The outer sleeve has a tissue-receiving window, and the inner sleeve has a distal end which cuts tissue as the inner sleeve is advanced past the window. The tissue is received into a lumen of the inner sleeve, and the inner sleeve lumen is typically enlarged in a proximal direction to reduce the tendency of resected tissue to lodge therein. The tissue displacement member is optionally provided at a distal end of the outer sleeve to further aid in dislodging tissue which
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